CARIBOU DISTRIBUTION

ON THE BATHURST CALVING GROUNDS,

NWT, JUNE 1995

Northwest Territories Resources, Wildlife & Economic Development

103-06975/

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YELLOWKNIFE, NWT

1996

Manuscript Report No. 87

THE CONTENTS OF THIS PAPER ARE
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ABSTRACT

Current mining activity is focusing attention on the Bathurst caribou herd's calving grounds where we have limited information on annual calving distribution. Effective protection depends on understanding where caribou calve and how predictable the use of those areas is from year to year. The objective of an aerial transect survey, carried out on the 7 - 8th of June and the 15 - 16th of June, was to systematically map the distribution of Bathurst caribou on their calving grounds. We predict that spring migration may be delayed due to deep snow on the barrens and that most of the calving will occur west of Bathurst Inlet.

Methods and results of the June 1995 survey were not comparable with previous surveys because of a 7 day interruption in surveying. 90% of the caribou observed were west of 106°50'. Calving took place as far east as the Perry River and west to 110° 50'. The highest concentration of cows and calves was observed between the Hood and Burnside Rivers. Scattered groups of cows and calves were observed moving east of the Perry River and may be animals belonging to the Queen Maud Gulf herd. The BHP Boston property at Spyder Lake was within the boundary of the 1995 caribou calving distribution.

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INTRODUCTION

Protecting caribou calving grounds is a wildlife management and community priority. Current mining activity is focusing attention on the Bathurst caribou herd's calving grounds where we have limited information on annual calving distribution. Yet effective protection depends on understanding where caribou calve and how predictable the use of those areas is from year to year.

We have mapped the calving distribution of the Bathurst caribou herd for 13 years between 1966 and 1995 (Sutherland and Gunn in press) but not in consecutive years which hampers determining if there are trends in area use (Figure 1). Although these mapped areas have a high degree of overlap there is annual variation whose cause is unknown. We suspect that spring travelling conditions is one factor that influences when cows reach the calving grounds and thus where they calve in some years. We know that when deep snow causes the Porcupine caribou herd to be displaced from the coastal calving grounds to the foothills, calf loss is greater (McCade 1994).

Snow is deep on the barrens this year (1995) and we predict that spring migration may be delayed and thus the caribou may not reach the usual (average) calving grounds (Figure 2). Our objective was to systematically map the 1995 distribution of caribou calving on the Bathurst caribou calving grounds. We predict that calving will be around Bathurst Inlet (specifically that 90% of the caribou will be west of 106°50') and that snow cover is more extensive than the long term average for the date of the survey. Our criterion to determine the calving ground boundary was not seeing a caribou calf for 10km after a previous sighting on the transect.

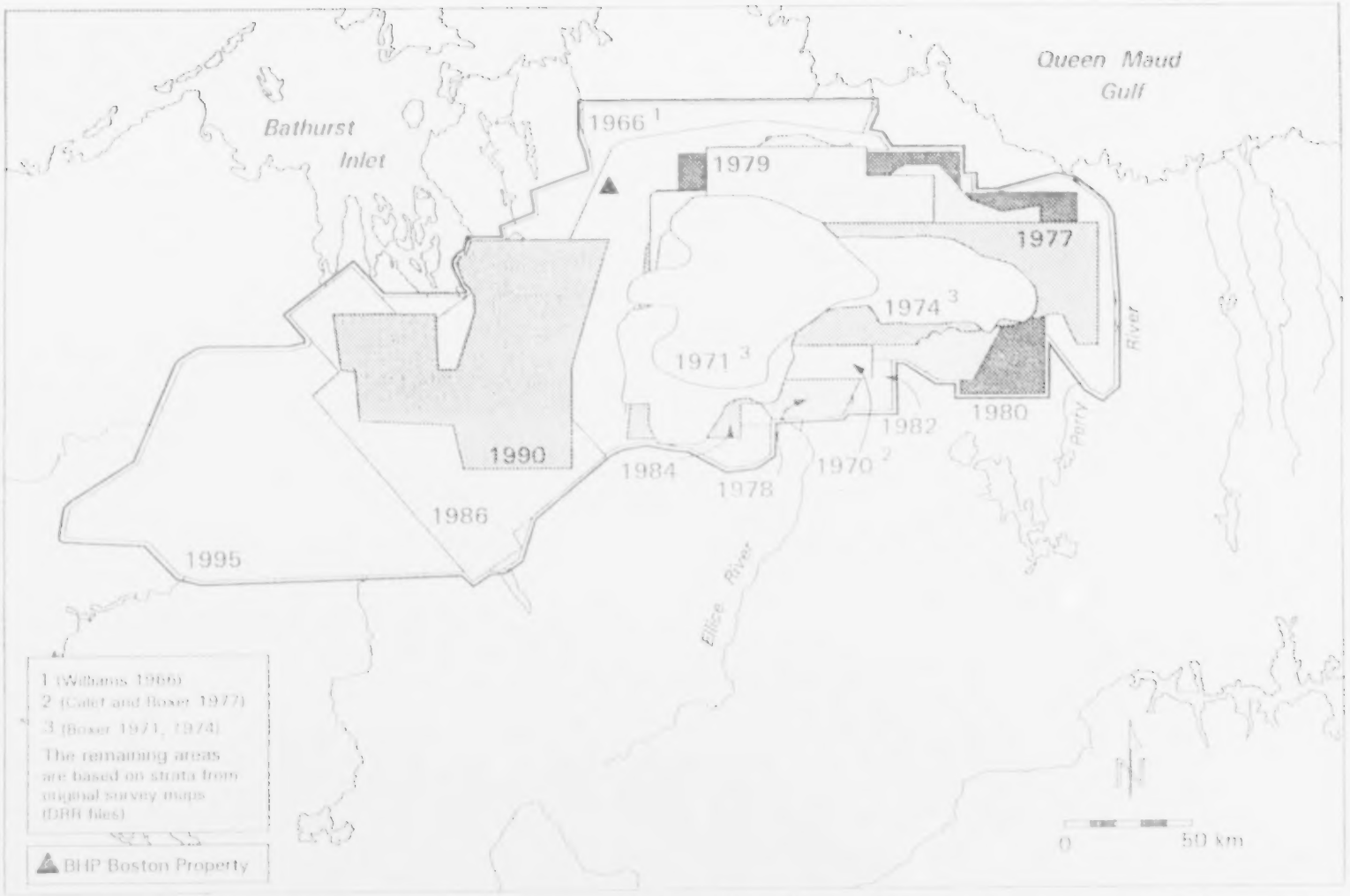
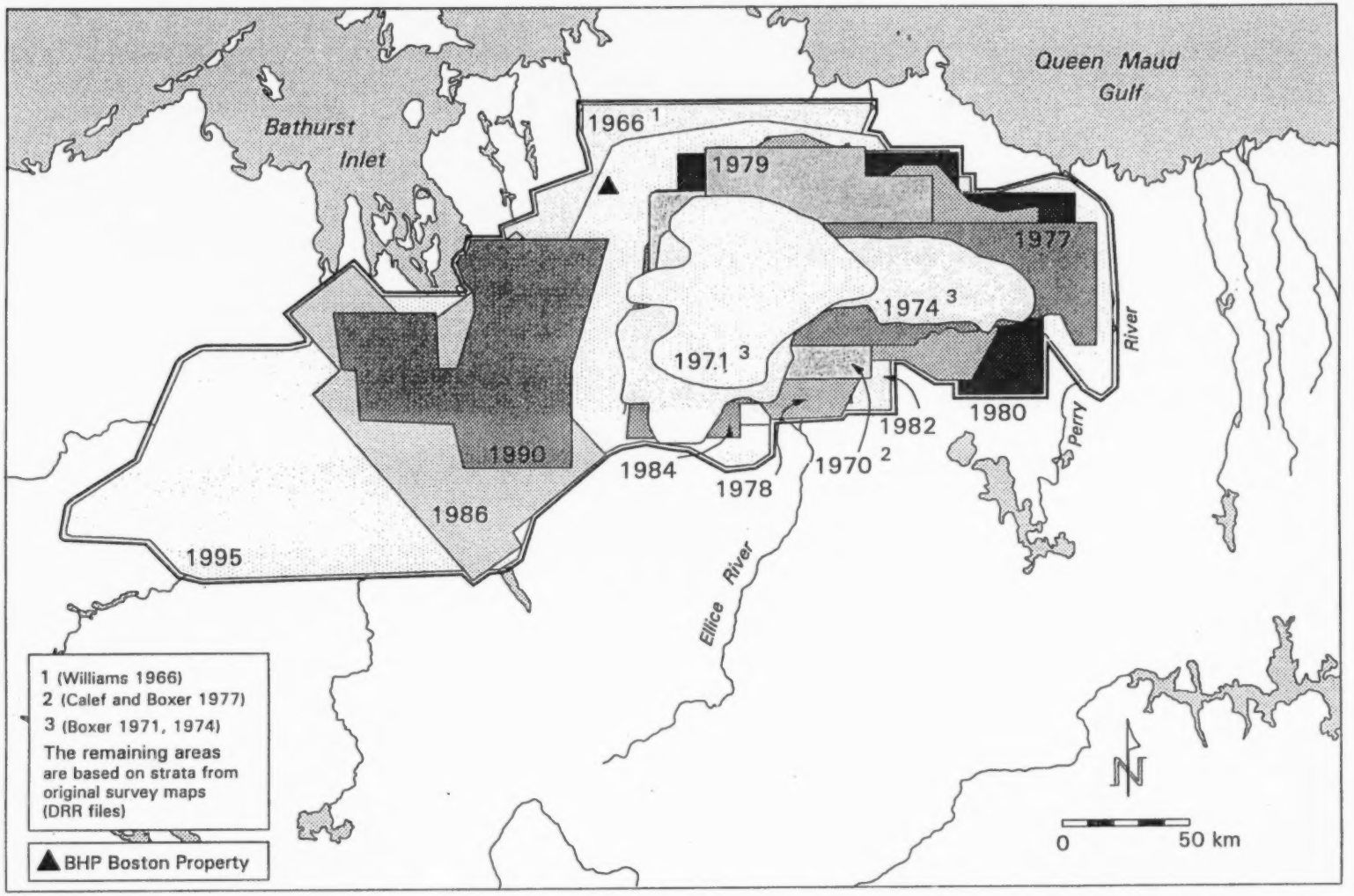


Figure 1. Bathurst caribou calving distribution between 1966 and 1995.



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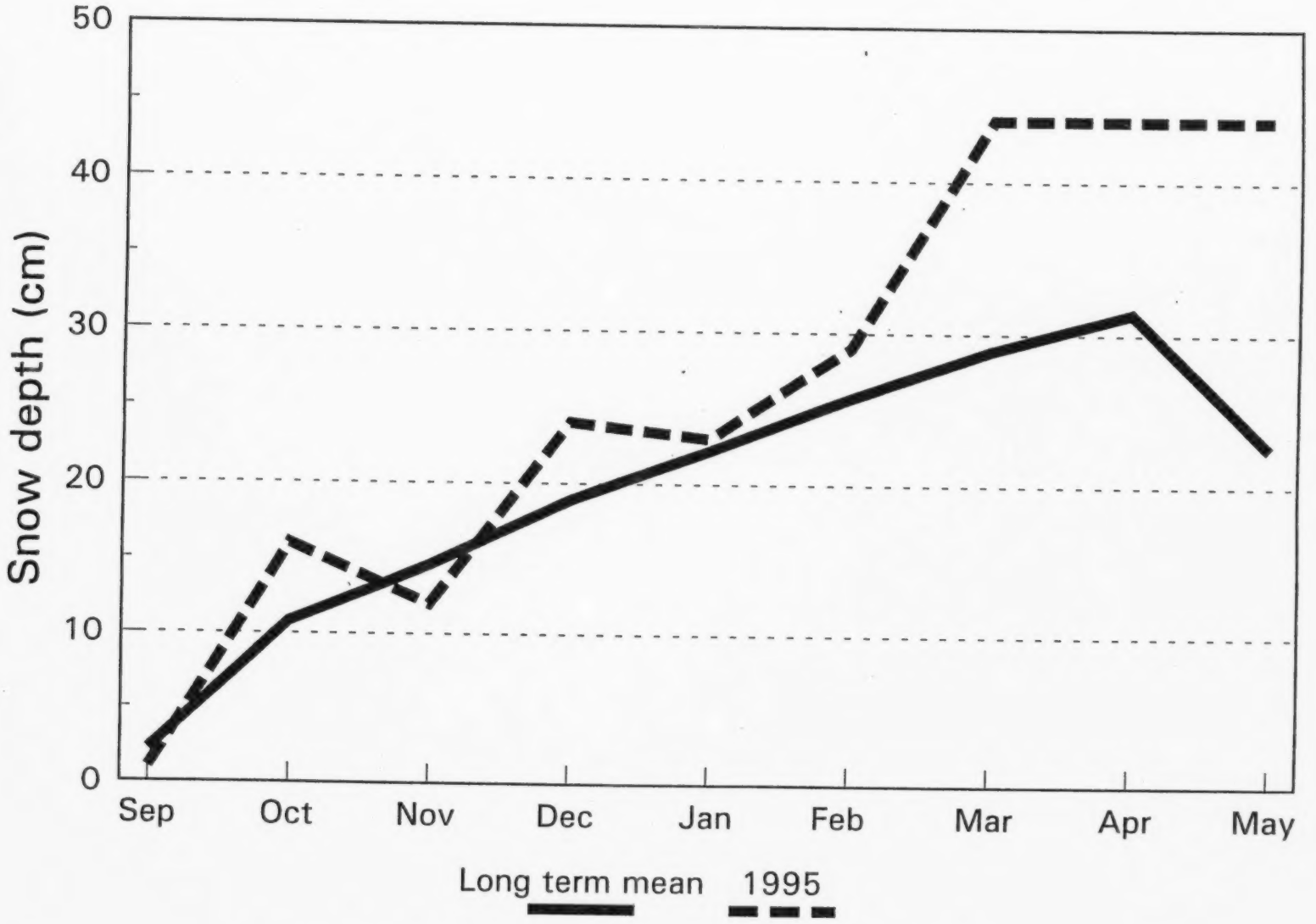

Figure 2. Snow depth (cm) on the last day of the month for Cambridge Bay, NWT, 1995.

METHODS

In June 1995 we surveyed the known calving grounds. Our coverage was about 5% based on transects spaced 19 km apart to systematically cover the traditional calving grounds. The transects were a 0.8 km strip on either side of the aircraft and were orientated east-west perpendicular to the major rivers and coasts, to avoid a sampling bias if the caribou were concentrated along drainages and in the lowlands. We had to modify the design after an interruption to the survey. We flew north-south as well as the east-west transects as we wanted to determine the boundaries and we were unsure how much the caribou had redistributed since the 8 June flights (Figure 3).

We used a Helio-Courier aircraft on skies with a right and left observer both seated in the rear and the pilot navigated and plotted observation numbers on 1:250,000 topographic maps. The left observer recorded the sightings for both observers by location number in a field notebook.

Boundaries for the inside and outside of the transect were calculated (Norton-Griffiths 1978) and marked with red tape on wires stretched from an eye bolt on the wing to the fuselage (the Helio-Courier does not have wing struts). When flying along the transects, the aircraft altitude was 224 m above ground level and the airspeed was 160 km/h.

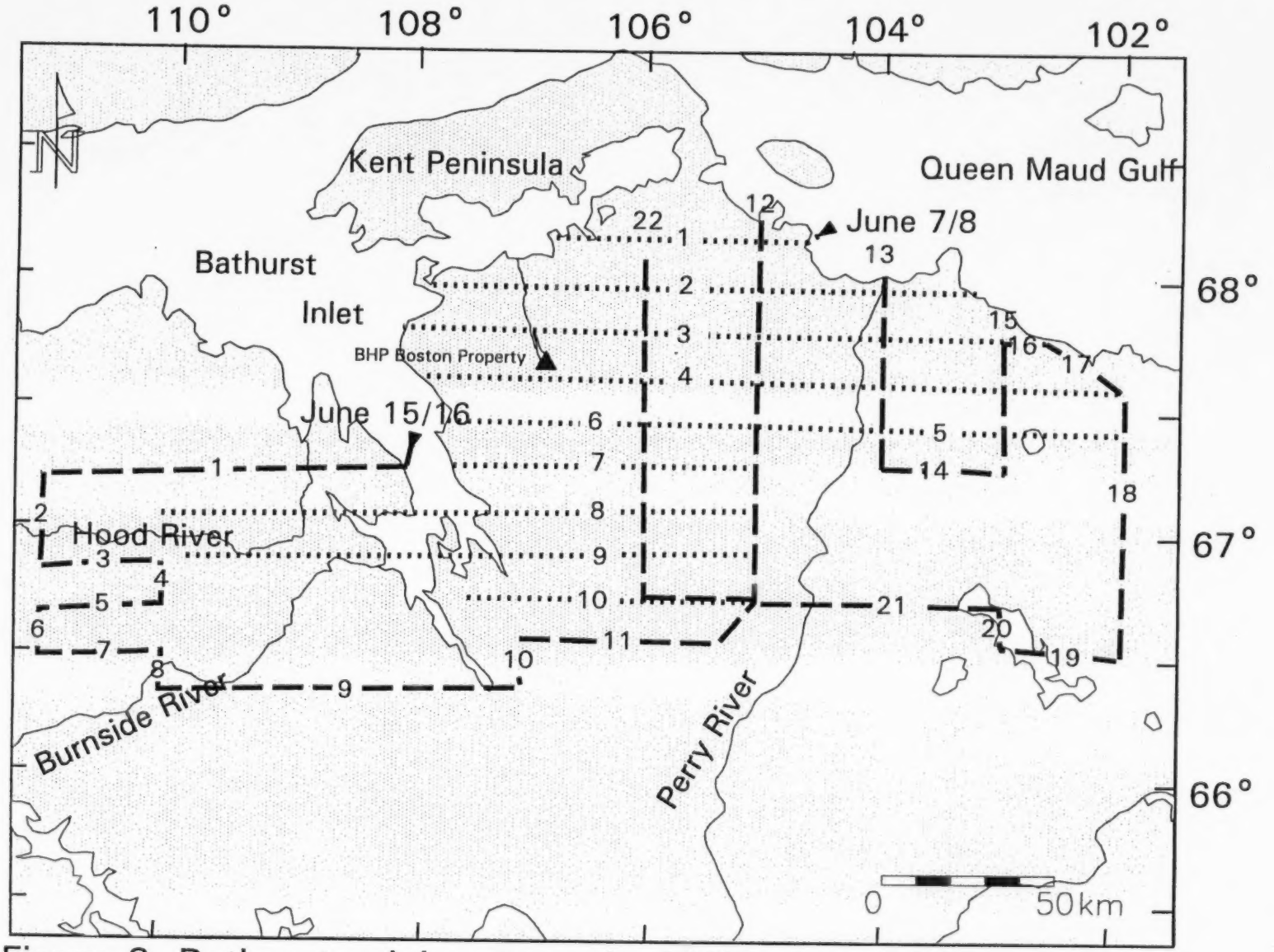

Figure 3. Bathurst calving grounds, NWT, June 1995.

RESULTS

Mapping the boundaries for the calving ground was only partially successful in June 1995. Initially we flew on the 7th and 8th of June but then the pilot's return to Norman Wells when it was threatened by forest fires interrupted the survey until 15 and 16 June. We counted 655 cows and 211 calves on 3080 km^2 of strip transects across the survey area (Table 1, Appendix A). We were based at Cambridge Bay and flew 31.3 h: 19 h on transect and 11.3 h off-transect.

Weather and snow conditions that would influence the conspicuousness of the caribou against the background varied (Table 2, Appendix B). On overcast (smoky) days, caribou were relatively inconspicuous against the ground. Snow melt was rapid by the time the survey started on 7 June and snow cover was variable between 30 and 70% and patchy. The ground was bare except for snowbanks by 15 June.

Our observations did support our prediction that 90% of the caribou will be west of 106°50' (Figure 4). Our flights on 7 and 8 June revealed calving east of Bathurst Inlet as far east as the Perry River (102° W) and also west of the Inlet as far as 110° W (Figure 5). On 7 June along lines 1-5 the caribou and few newborn calves east of the Inlet were moving east along heavy trails in the snow. When we returned on 15 June 1996, we went first to west of the Inlet and determined that the western boundary was about 110° 50" W but the southwest corner and southern boundary east to Bathurst Lake were undefined as we were still seeing cows and calves. The highest concentrations where we saw hundreds of cows and calves aggregating was south of the Hood River on the high plateau between the Hood and Burnside rivers. East of Bathurst Inlet our flights on 15 and 16 June suggested that the southern boundary angled southwest to northeast but we did not determine an eastern boundary. We flew along the Perry River and 102°W and were still seeing scattered cows and calves who were moving east.

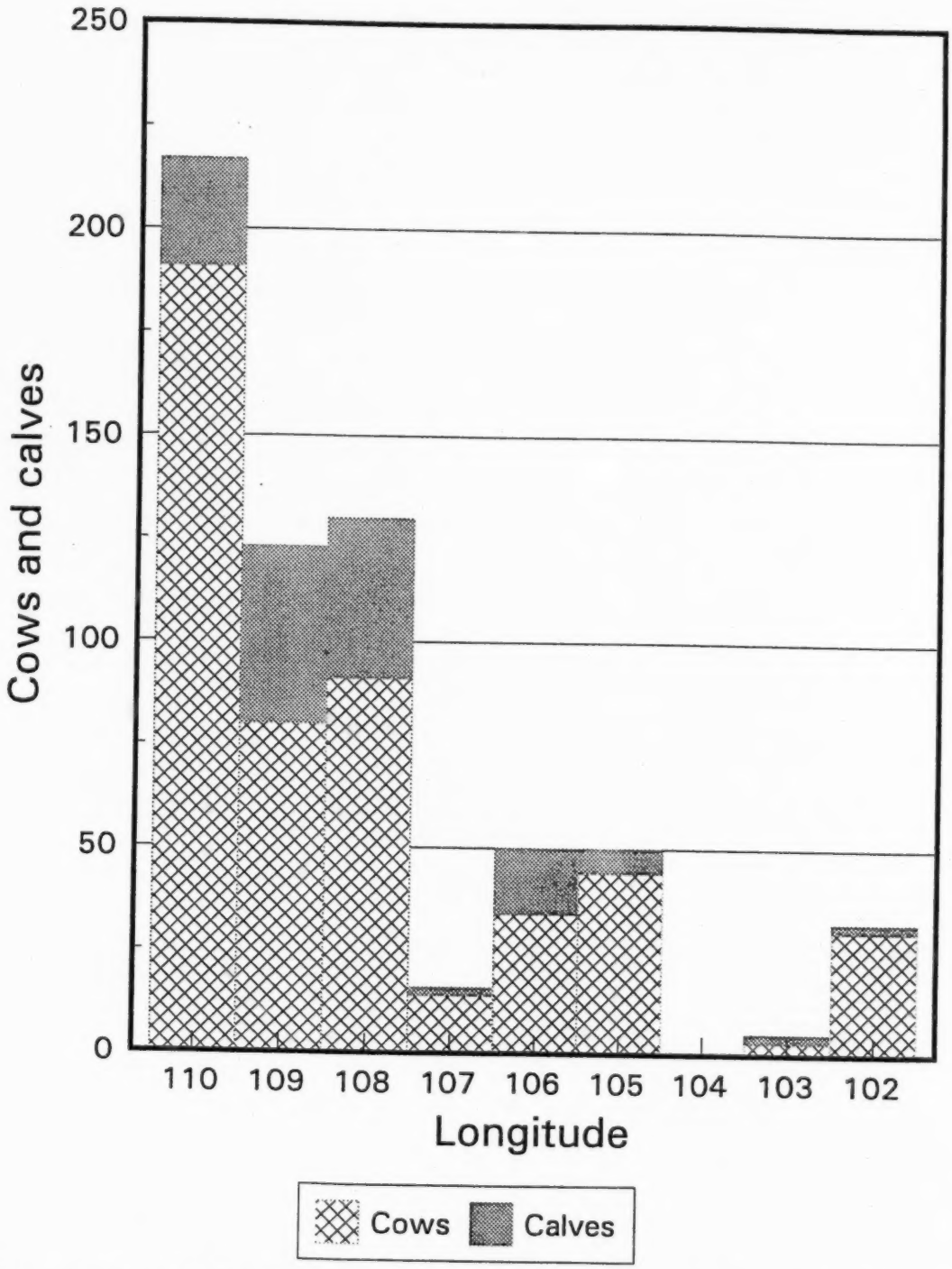

Figure 4. Distribution of cows and calves on the Bathurst calving ground, NWT, June 1995.

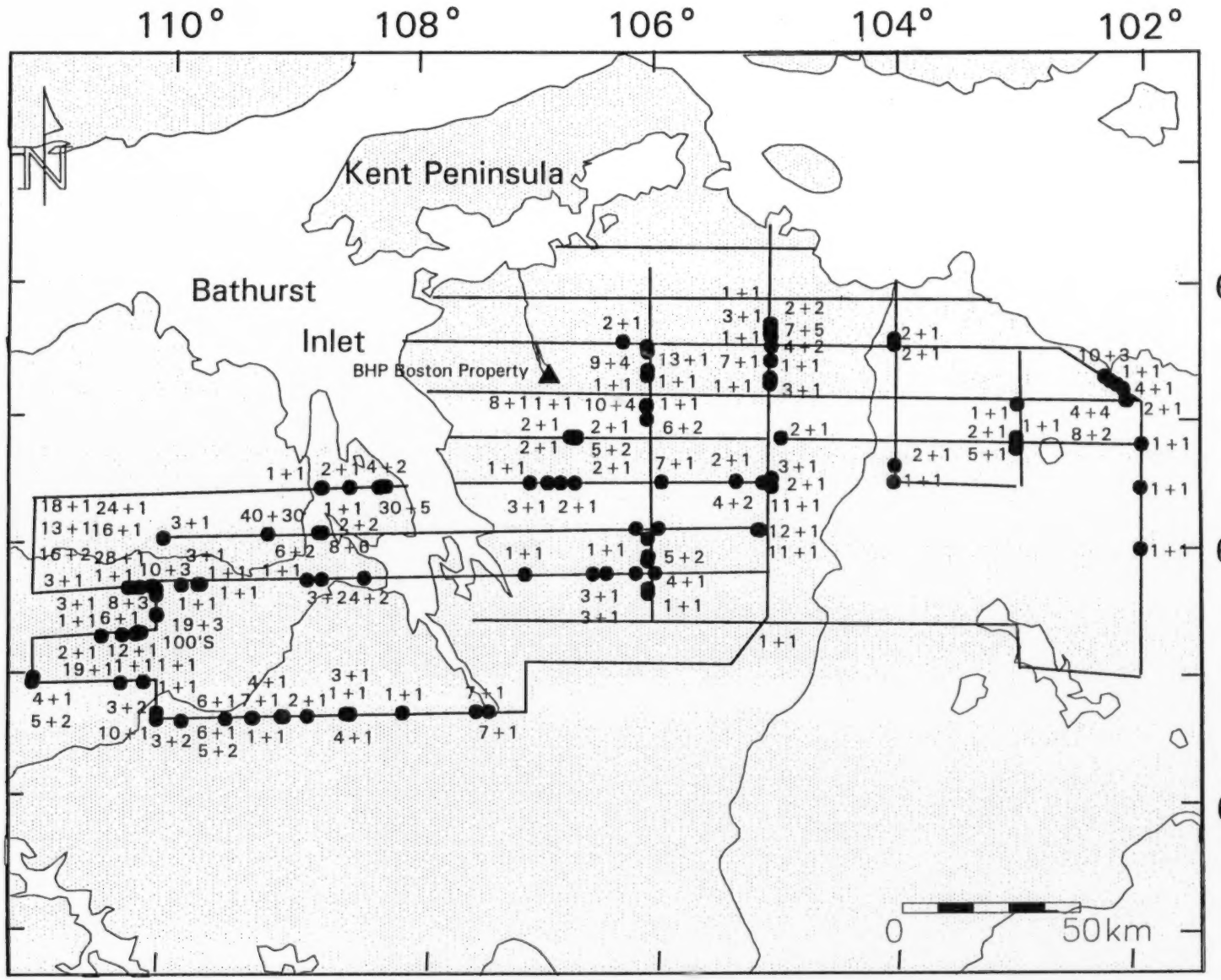

Figure 5. Cows and calves observed on the Bathurst calving ground, NWT, June 1995.

DISCUSSION

Our mapped distribution was neither comparable in methodology nor results to previous surveys (Sutherland and Gunn In Press). Our methods differed because of the 7 day interruption. The first survey on 7 and 8 June was incomplete when the pilot left and the second part was incomplete because we had essentially to start again and then were short of available flying hours.

The distribution also differed from previous years. Finding hundreds of cows and calves as far west as 110° W extends the boundary of the traditional calving grounds (Figure 3). The eastern boundary was similar to some other surveys but the apparent departure was that cows and calves were still moving east. Either these were not Bathurst herd cows or an eastern extension to the calving grounds had been missed in previous years.

Barren-ground caribou wintering around Elu Inlet may be from the Bathurst herd but hunters have suggested that they travel further east to calve (Noah Kaniak pers. comm.). The 1995 spring snow melt was late which may have delayed spring migration to the east and those cows and calves on the northeast Bathurst herd's calving ground may have been from the Queen Maud Gulf herd and were delayed in reaching their calving grounds east of the Simpson River. This would raise as a management issue, the question of the population delineation for caribou wintering northeast of Bathurst Inlet. Commercial caribou quotas and the domestic harvest for Cambridge Bay and Umingmatok are currently assigned to the Bathurst herd. The information on calving distribution raises the question of whether we should assign the harvest to another herd. Caribou populations (herds) are delineated on the basis of their return to their traditional calving grounds. Monitoring movements of caribou that winter east of Bathurst Inlet would allow us to determine which calving grounds they use.

Our results on caribou calving distribution suggests that the BHP Boston property at Spyder

Lake was within the boundary of the 1995 calving distribution. We observed cows and calves within 15km of Spyder Lake on the 7 and 16 June 1995.

ACKNOWLEDGEMENTS

Renewable Resources and BHP Minerals Ltd funded the survey. Aerial observers were Noah Kaniak (Ekaluktutiak Hunters' and Trappers' Association), Joe Mackenzie (Renewable Resource Officer, Fort Rae), John Nishi (Renewable Resources, Coppermine), Jack Omilaganak (Renewable Resource Officer, Cambridge Bay) and Shawna Reed (Rescan Environmental Services Ltd). Perry Linton (Northwright Air Services, Norman Wells) was the survey pilot.

PERSONAL COMMUNICATION

Noah Kaniak (Ekaluktutiak Hunters' and Trappers' Association)

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APPENDIX A

Table 1. Caribou observed on transect during an aerial survey of the Bathurst calving grounds, NWT, June 1995.

Transect Number	Transect Length (km)	Number of Cows	Number of Calves
June 7			
1	87.0	0	0
2	187.5	0	0
3	224.0	32	3
4	245.0	0	0
5	124.0	0	0
June 8			
6	111.0	12	6
7	109.5	35	7
8	215.5	84	45
9	213.5	17	12
10	105.5	0	0
June 15			
1	131.5	44	16
2	41.5	0	0
3	46.0	119	9
4	20.5	26	15
5	43.5	54	10
6	19.5	9	3
7	43.5	2	2
8	17.0	3	2
9	134.5	68	15
10	20.0	0	0

Transect Number	Transect Length (km)	Number of Cows	Number of Calves
11	70.0	0	0
12	175.0	42	22
June 16			
13	84.5	7	4
14	43.0	0	0
15	55.5	8	3
16	18.0	0	0
17	31.0	5	10
18	120.0	9	5
19	43.5	0	0
20	19.5	0	0
21	131.0	0	0
22	148.5	61	22
Total	3079.5	655	211

APPENDIX B

Table 2. Weather and light conditions during an aerial transect survey of the Bathurst calving grounds, NWT, June 1995.

Date	Weather and light conditions
7 June	Overcast (scattered clouds but smoky), 5-10 °C, winds < 5 kt, visibility good, snow cover variable: 30 - 70%, patchy.
8 June	
15 June	Scattered cloud, 6 °C, winds 10 kt, visibility good, 10% snow cover (only snowbanks remaining).
16 June	Scattered cloud, 5 °C, winds 10 - 25 kt, visibility good, 10% snow cover (only snowbanks remaining).